

CLAIMS

1. Apparatus for the generation of fluorine by the electrolysis of hydrogen fluoride, the apparatus comprising:
5 a plurality of individual fluorine generating cassettes; said individual fluorine generating cassettes being operably connected to a fluorine gas distribution system for the remote use and consumption of said fluorine gas; said fluorine generating cassettes being individually isolatable from said gas distribution system and removable from the apparatus for remote maintenance, as hereinbefore defined.
- 10 2. Apparatus according to claim 1 wherein the fluorine generating cassettes are connected to the apparatus by valve means for the isolation and disconnection of said fluorine generating cassettes from the apparatus.
- 15 3. Apparatus according to claim 2 wherein the valve means are double isolation valves have a space therebetween which space is connected to an extraction and scrubbing system.
- 20 4. Apparatus according to any one preceding claim wherein the fluorine generating cassettes are installed within a common apparatus main enclosure.
- 25 5. Apparatus according to any one preceding claim wherein all fluorine generating cassettes are substantially identical to each other.
- 30 6. Apparatus according to any one preceding claim wherein said fluorine generating cassettes are provided with wheels.
7. Apparatus according to any one preceding claim wherein each fluorine generating cassette is provided with an enclosure.

8. Apparatus according to claim 4 wherein said main enclosure is connected to extraction equipment and to a scrubbing system.
9. Apparatus according to claim 7 wherein each fluorine generating cassette enclosure is connected to extraction equipment and to a scrubbing system.
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10. Apparatus according to any one preceding claim further including at least one fluorine purification cassette through which the fluorine output of said fluorine generating cassettes is passed.
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11. Apparatus according to any one preceding claim further including at least one fluorine buffer cassette connected in the fluorine line downstream of the at least one fluorine purification cassette.
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12. Apparatus according to claim 11 wherein the buffer cassette holds compressed fluorine.
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13. Apparatus according to any one of preceding claims 7 to 12 wherein a fluorine generating cell within the fluorine generating cassette is fixed to said enclosure such that said enclosure provides a cathode connection to said cell.
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14. Apparatus according to claim 13 wherein said enclosure includes a framework having panelling.
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15. Apparatus according to either claim 13 or 14 wherein the cathode connection is at 0 volts relative to earth.
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16. Apparatus according to any one preceding claim further including purging means to remove potentially reactive fluids from piping before fluorine is introduced thereinto.
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17. Apparatus according to any one of preceding claims 1 to 16 wherein the apparatus is transportable as a unit by land or sea.
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18. Apparatus according to claim 17 wherein the overall size of the apparatus is at most that of a standard ISO container.
19. Apparatus according to any one of preceding claims 1 to 9 wherein each of said individual fluorine generating units are further provided with a power supply unit at least for electrolysis, fluorine purification means, fluorine compression means and fluorine storage tank/buffer means.
- 10 20. A method for the operation and maintenance of apparatus for producing fluorine by the electrolysis of hydrogen fluoride, the method comprising the steps of: providing a plurality of fluorine generating cassettes operably connected to a fluorine gas distribution system for the remote use and consumption of said fluorine; providing means for isolating any individual fluorine generating cassettes from said fluorine gas distribution system and from each other; and providing means for the disconnection and removal of said isolated fluorine generating cassette from said apparatus without interruption of supply of fluorine from remaining fluorine generating cassettes.
21. A method according to claim 20 wherein the plurality of fluorine generating cassettes are provided with sufficient fluorine generating capacity such that a total demand for fluorine may be met by less than the total number of fluorine generating cassettes within said apparatus.
- 25 30 22. A method according to either claim 20 or claim 21 wherein an individual fluorine generating cassette may be removed from the apparatus and taken to a remote site for maintenance whilst still maintaining fluorine output to meet demand.

23. A method according to any one of preceding claims 20
to 22 further comprising the steps of providing each
individual fluorine generating cassette with power
supply means at least for electrolysis, fluorine
purification means, fluorine compression means and
5 fluorine storage tank/buffer means.